

*One of the
Handy Dog Booklet Series*

FEEDING THE DOG

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INTRODUCTION

Half a dog's pleasure in life is in eating and half his health lies in his eating. More cases of canine sickness arise out of abnormal conditions in the stomach and intestines, which conditions are caused by improper feeding, than from any other cause. A veterinarian gives a correct or nearly correct diagnosis two of three times when he mentions digestive trouble.

Improper feeding may consist of too much food, the wrong kinds of food, too many feedings, or food not prepared properly.

So much has been said and written concerning the feeding of the dog, whether puppy or grown, that in the midst of this profusion and confusion, the dog owner is nonplussed. Not a little of all the much advice is contradictory. One person presented as an authority, states that the dog should not eat potatoes; another presented as an equally reliable authority, says that the dog should eat potatoes.

Also, the subjects of vegetables and vitamins have been overdone in the discussions of canine diet.

It is well for the breeder, handler, kennelman and pet dog owner to bear in mind

that regardless of all the advice, contradictory and otherwise, a happy ending will ensue if the dog has plenty of exercise, is kept in dry, ventilated quarters, has the proper training and human contacts, is fed regularly and not too often, and if all situations are met and handled by a generous application of ordinary common sense. Dogs fortunately have a habit of surviving much of man's neglect, mistreatment and wrong feeding.

For whom is this booklet written? Basically it is written for the dog, for man's best friend, in order that he may obtain more enjoyment out of life thru proper feeding and the consequent better health.

It is written for all classes of readers—all dog owners, from the professional kennelman down to the one-dog or pet-dog owner—the layman dog owner, for expert and novice, oldtimer and beginner alike.

Therefore, it must be correct scientifically above all other things. Secondly, it must be complete for every important phase of the feeding of the dog. Thirdly, it must be written plainly, be conveniently arranged, and embody the latest findings in the field of canine dietary research.

A—ANATOMY OF DIGESTIVE SYSTEM

The following is extracted from the author's Anatomy of the Dog. The material may seem to the reader to be extensive and involved for inclusion in a booklet on canine feeding. Yet a clear understanding of the anatomy of the digestive system is essential for a scientific approach to the subject of feeding the dog. The author's aim in this booklet is to present the subject in a method that is accurate and helpful.

It is urged upon the reader that he study carefully this section inasmuch as the time and effort given will be well repaid in a knowledge of his dog useful not only on the subject of feeding but on almost all other canine subjects of health and sickness.

The digestive system is concerned with taking in, preparing and disposing of food for the body. Chemical and mechanical changes must take place before the food which is taken into the mouth becomes a part of the living tissues of the body. This process is known as digestion; and the transfer of the digested food into energy and tissue thru the blood stream is known as assimilation.

The route of the digestive system is the alimentary tract; it may be said to extend from opening to opening, from the mouth to the anus of the rectum.

It is divided into—1. mouth, 2. esophagus, 3. stomach, 4. small intestine, 5. large intestine. Along with these we must consider the digestive glands, the liver, spleen and pancreas.

SAW-TOOTHED LOWER LIP

The start of the journey is at the opening gate, the mouth, which cuts, grinds and breaks up the food for digestion. In the dog the lips being thin and mobile, do not play an important part in the seizing of food as is true with herbivorous animals such as the horse and cow.

It is interesting to note that the upper lip has a central groove while the edges of the flaccid lower lip are highly dented or saw-toothed in outline.

DOGS "THROW" A DRINK

Water is taken into the mouth by lapping, a throwing-back of the tip of the tongue toward the roof of the mouth.

GULPING NOT A VICE

The dog chews very little at all except when crushing bones and eating hard food such as dry biscuit. Gulping is the customary, natural act of the dog.

As saliva is not a particularly important juice in the digestion of the food in a dog, as it is in the human, it is not necessary that the dog chew food thoroly. The shape of the teeth indicates that their function is to tear rather than to grind.

The muscles of the teeth and jaws are strong because the dog does with his jaws most of the things we do with our hands.

The salivary glands secrete and pour saliva into the mouth for the purpose of softening the food. These glands are named parotid, submaxillary, sublingual, and orbital.

A SUPERSTITION ABOUT DOGS

The tongue is thin, long and mobile. The size and shape vary with the breed. The upper surface is marked by a central groove and is coated thickly with short, thin hair or papillae, of rough touch to the human skin. The under surface has a cord composed of muscular tissue. It was presumed in old times and by some today that to remove the "worms" or cord from the tongue cured many ills, including running fits.

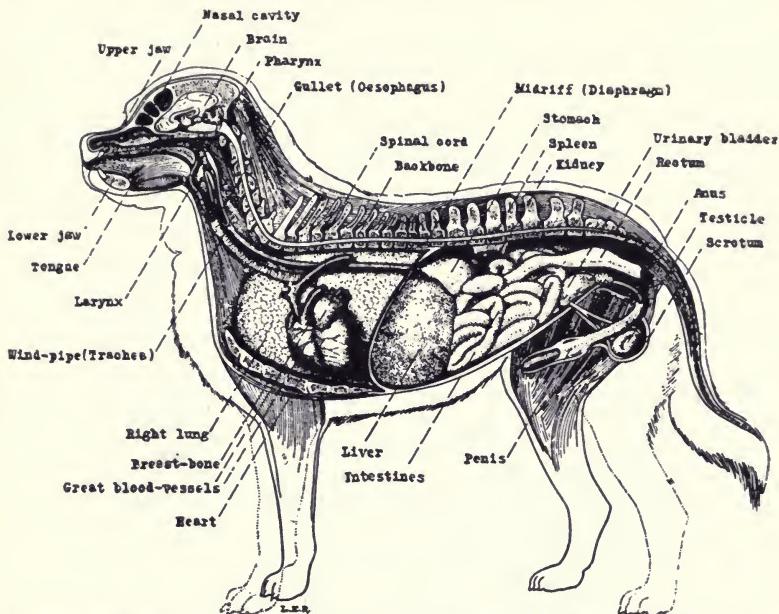
EASY TO BREATHE AND VOMIT

The soft palate, which hangs from the roof of the mouth and the pharynx, is short in the dog; hence the dog can breathe easily through the mouth and can vomit easily.

TEETH A "SYSTEM" OF OWN

The teeth can be considered under the separate heading dentition, but as they are a practical part of the digestive system, we discuss them here. See illustration on page 5.

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● General sketch of anatomy of the dog as taken from the author's booklet *Anatomy of the Dog*.

The teeth are the hardest organs of the body, deeply imbedded in the jaw bones.

The first or milk or baby teeth, begin to erupt as early as three weeks. All milk teeth are completely broken out of the gums by the age of five weeks.

The change to permanent teeth begins at four months and is ended at seven. The molars are permanent teeth which begin at four months and end at seven months for their final appearance.

The dog, whatever the breed or size, with few exceptions, has 42 permanent teeth, 22 in the lower jaw and 20 in the upper. See sketch.

Teeth are named according to the size, shape or purpose—twelve incisor or cutting teeth, four canine teeth (or fangs, two in each jaw, one on each corner and the upper ones fitting outside the lower ones—and strangely there are always the six incisor teeth between the two canine teeth), eighteen pre-molars, and eight molars or grinders.

The varying sizes and shapes of the dog's teeth contrast with the greater uniformity of the human teeth.

In composition, the tooth has three different structures—the enamel, the thin external white part, covering the crown only; the ivory or denture under the enamel; and the center, containing the nerve and small blood vessels.

PHARYNX IS "STORM VESTIBULE"

The pharynx is a vestibule or cavity behind the mouth and at top of the neck. It is attached to the base of the cranium above while below is the larynx. It serves

as passageway both for air and food. Bones can easily become lodged here.

THE ESOPHAGUS HAS "WAVES"

The esophagus or gullet is on the outside of the neck, that is, above the trachea, or windpipe; when we rub the front of the neck, we contact the gullet. About midway, it turns behind the windpipe.

It passes along the neck thru the chest (above the heart), thru the diaphragm and then quickly enters the stomach.

As the dog swallows, the esophagus has a wave-like movement toward the stomach. In vomiting, the movement takes place in the opposite direction.

"RUBBER" STOMACH

We come now to the central and most important member of the digestive system, the stomach. It is large compared to other internal organs and yet small in consideration of the work it performs.

The stomach might seemingly be made of rubber as it can stretch considerably, even to the extent of holding fully three quarts in a dog of 40 pounds weight. But this very elasticity deludes both humans and dogs into believing they can load the stomach with any excess amount of food.

The dog has a sensitive stomach; he nauseates quickly and vomits readily.

INSIDE WALL OF STOMACH ROUGH

The stomach has the shape of a curved sack and lies immediately behind the diaphragm and liver, which is somewhat to the left side.

The lining of the stomach is studded with glands; its surface is rough and corded. An inflamed condition of this lining brings on gastritis.

The glands secrete pepsin and acid;

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and the two together constitute the gastric juice, which breaks down the protein constituents of food into more soluble peptones.

MANY TWININGS AND CHURNINGS

The stomach turns and revolves upon itself until the food is in a semi-fluid form called chyme. Then it passes thru the pylorus into the small intestine.

SPLEEN ATTACHED TO STOMACH

The spleen is found on the outside left of the stomach.

On the right side are located the right lobe of the liver and the intestines. The exit to the stomach is the pylorus.

THREE SECTIONS OF SMALL INTESTINE

The small intestine has an average length of about thirteen feet (about five times the length of the body) and is divided into three parts—duodenum, jejunum and ileum.

The intestines hang from the backbone supported by a thin transparent membrane filled with many small blood vessels.

NECESSITY FOR "HEALTHFUL" INTESTINE

The intestines themselves are lined with mucous and other secretory glands. The inflammation of the membrane and glands causes many ills of the dog such as diarrhea and intestinal catarrh. Most parasites are harbored in the small intestine of the dog.

THREE SECTIONS LARGE INTESTINE

The large intestine, much shorter than the small intestine, is about two feet in length and is composed of caecum, colon and rectum.

NO PERISTALTIC OR WAVE MOTION

Whereas the small intestine has both longitudinal and crosswise bands of construction in order to give the wavelike contraction, there is no such construction in the large intestine.

THE DOG'S APPENDIX

The caecum is about three to five inches long and is found in the region of the right flank. It is twisted in the form of a spiral and corresponds to the appendix in the human. It opens from the small intestine thru the ileocecal valve. Here the whip worm and other parasites often lodge, beyond direct contact with most medicines.

THE WINDING COLON

The second part of the large intestine, which also is called the bowel, is the colon; this is attached to the backbone just back of the kidneys. It winds about, touching the stomach on the right, then backward to the left kidney.

END OF ALIMENTARY CANAL

The third part of the large intestine is the rectum; this ends with the anus or external opening thru which the contents of the bowel are discharged. It is several inches in length.

B—INTESTINAL MOVEMENTS AND FOOD CHANGES

The piece of food which the eye sees, is placed in the mouth and involuntarily swallowed. It becomes a "part of the eater" except that portion which is passed out as unneedful thru the bowels. How a piece of food eaten becomes life itself is still a mystery that challenges the scientists and their laboratories.

The changes wrought by the digestive process are chemical and mechanical.

The mechanical factors in digestion are intended mainly to aid in the chemical changes. Consequently the mechanical factors serve chiefly to break the food into small particles and to move the particles along the alimentary canal.

The Dog Does Not "Spit"

The first act, of course, is to place the food into the mouth and chew it. Here the teeth, tongue, membranes of the mouth, and the saliva secretion do their work. To this we must add the nerve of taste, which is situated in the tongue and also to some extent in the membranous lining of the mouth.

The saliva in humans, thru the enzyme ptyalin, converts starch into sugar. Most domestic animals do not have Ptyalin in the saliva; the dog, cat and fox have little or none at all.

Consequently, the chewing of food by the dog is not necessary for the purpose of adding saliva.

Three Chemical Factors

The chemical factors comprise three general groups.

The first is enzymes, which are produced by the digestive glands and which are present in the food itself.

The second is bacteria and protozoa.

The third is the chemical substances other than enzymes which are produced in the digestive process, for instance hydrochloric acid.

Five Intestinal Objects

The movement of the intestines may be considered to have five purposes:

1. to mix the food with the digestive juices;
2. to bring the food after broken down into liquid form into contact with the mucous membranes for absorption into the blood stream;
3. to move the ingesta from place to place along the bowel;
4. to expel the residue or unwanted material from the rectum thru the anus or external opening;
5. to assist in the flow of blood and also of lymph thru the vessels which are located in the wall structure of the intestines.

Action of Digestive Juices

Saliva is somewhat alkaline. After it has acted upon the food, altho very little in the dog, the stomach produces the gastric juice, an acid secretion. The enzyme pepsin is found in the gastric juice and acts particularly on proteins.

After the food has gone from the stomach into the small intestines, the pancreatic juice, which contains three enzymes, trypsin, amylase, and steasin—

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acts upon the food, breaking proteins into different bodies, changing starches into sugar, and helping the bile, which is secreted out of the liver, to digest fats.

The fats are acted upon very little in the stomach and on this account, the author believes that fats are not particularly desirable for human or canine diet altho many readers will disagree. Fat in the body is not produced by eating oils and fats.

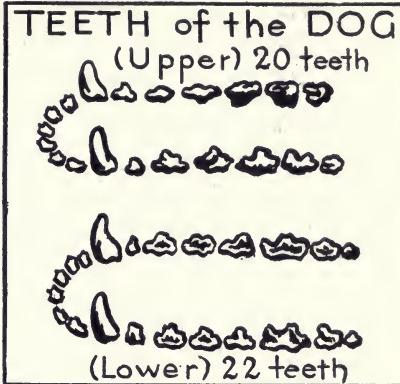
Important Pancreatic Juices

The pancreatic juices are the most important in the digestive process, even more important than the gastric juice. They contain three ferment—amyllopin, trypsin and lipase. The first converts starch into sugar; the second converts proteins into soluble peptones but in a different and further way than does the gastric juice; the third (lipase) further emulsifies and saponifies fats and splits them into fatty acids and the like.

Bacteria in Bowel

In the large intestine there are only maceration and decomposition, in which bacteria play an important part.

The waste products pass on to the rectum and leave the body thru the anus



at intervals, at least twice daily in the normal adult dog.

Practically two-thirds of the digestive process takes place in the small intestine, where most of the absorption is done. The food which can not be absorbed keeps moving into the colon and then passes out thru the rectum.

C—CLASSIFICATION OF FOODS AND DIETARY ELEMENTS

The dog's diet must have a consideration for six things — vitamins, mineral salts, water, and the three general food groups, which are — 1. proteins or nitrogenous; 2. carbohydrates (commonly termed starches); 3. fats and oils.

Proteins build up and repair; they furnish the material. Carbohydrates furnish energy, heat, "steam." Fats and oils furnish some of the heat.

The Three "Sin Sisters"

The human stomach possesses digestive fluids or agents for all three—trypsin for protein, amyllopin for carbohydrates, and steasin for fats. The dog, however, has mostly trypsin for protein.

Calorie is a Heat Measure

Calories refer to heat only, not to nutrition. One calorie is the quality of heat necessary to raise one gram of water one degree Centigrade in temperature.

A food of high caloric value is a food that produces much heat after it has been assimilated into the body tissues.

The Chief Protein Foods

The proteins are rich in nitrogen and include albumin, as in the white of an egg; casein, from milk; fibrin in blood; gelatin, from bones after boiling.

Meat of all kinds, eggs, milk and butter, cheese, and fish form the chief protein foods.

Fats and oils are self-explanatory as to elements. Fats should furnish only about 40% of the calories needed by the body. Fat in the diet up to 10% is beneficial and tends to lessen dry and scaly skin.

The Carbohydrate Group

The carbohydrates include the (1) simple sugars such as glucose and fructose.

(2) Compound sugars such as cane sugar maltose.

(3) Starches, lactose, (milk sugar, constituting about 4% of liquid milk; it forms lactic and butyric acids).

(4) Pentosans such as gum and pectin.

(5) Cellulose, which includes all fibers and is more complex than starch.

Digestibility of Starches

Simple sugars are most easily digested. Compound sugars usually change into the simple sugars and then are absorbed. Starches require more treatment by digestive juices than any of the other carbohydrates and some starches are not entirely convertible into simple sugars. The ease of digestion may be said to be in the order in which we have enumerated the five main carbohydrates.

Starch as Part of Canine Diet

It is an old controversy whether or not carbohydrates, particularly starch, have a place in the diet of the dog. For instance, potatoes present themselves as the chief starch dietary item. Usually the dog eats too much potatoes and too much in proportion to other elements in the diet. This prevents a balanced diet. The harm in eating potatoes is caused mainly by the excessive amount eaten and the excess compared to a properly balanced food containing fats, proteins, and other elements. The dog gulps large masses,

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Material	PARTIAL ANALYSIS OF FEEDSTUFFS--all figures are percentages				
	Protein	Carbohydrate	Fat	Moisture	Minerals
Steamed bone meal	25.	3.9	3.3	3.6	63.
Linseed oil meal	29.6 - 38.5	37.4 - 43.3	5.6 - 6.7	.7 - .8	5.1 - 6.3
Oat meal	14.3	67.9	8.14	6.93	2.15
Soya bean oil meal	46.4	31.8	1.6	8.3	6.
Alfalfa leaf meal	22.	41.	3.5	7.	13.
Yellow corn meal	6.6 - 8.6	71.9 - 76.6	.33 - 1.8	13. - 17.	.2 - .6
Fish	7.2 - 22.1	5.1 - 16.2	.2 - 14.	28. - 82.	.5 - 1.7
Fish meal	51.		8.5	10.	28.
Beef & horse meat	12.4 - 18.6		16.6 - 44.6	39. - 60.	3. - 4.5
Standard middlings	14.8 - 15.3	57.6 - 61.7	4.6 - 5.	10.	3.4 - 5.6
Whole milk	3.8	4.5	3.6	87. - 92.	.7
Whole dried milk	23.9 - 27.6	34.4 - 41.2	23.5 - 30.	1.4 - 5.5	5.3 - 6.3
Dried skim milk	31.9 - 35.7	48.4 - 54.	.34 - 1.9	4.7 - 8.	7.2 - 8.4

(All figures are percentages)
 (*) Ocean fish are much richer in proteins minerals and vitamins than
 fresh water fish. Note also the high moisture content of fish.

which may remain unbroken up in the intestinal tract.

We can say with certainty that a small amount of potatoes fed now and then, with plenty of meat and fat, is not injurious to the dog's health.

At least this can be asserted definitely—cooked starches are preferred to those in the raw state.

"Starches" Reduce Food Costs

The energy-forming food stuffs are carbohydrates and fats. When carbohydrates particularly starches as presented in such cooked cereals as oatmeal, wheat (and bran), rice, barley and the like are digested, they spare protein. In other words, to feed more starches particularly in the way of cereals (and this includes dry biscuit food) reduces the burden placed upon the digestive tract and does not require so much protein such as meat. Thus the feed bills are reduced in kennels.

Carbohydrates—let us call them starches—are the materials which unite with ammonia, a waste product of the body, and this union in turn forms one of the amino acids. A result is an increased amount of lactic acid or pyruvic acid or both and consequently, an increased combination of amino acids, a very desirable condition.

Fight Bacteria in Colon

The intestinal tract is crowded with bacteria; these play upon protein with the resulting decay or putrefaction and toxic substances or poisons. The body does not get the full value from the protein consumed, on this account. However, when carbohydrates are present, the bacteria acts upon them also and slows down the bacteria which act upon the protein; consequently the intestinal tract is left in a less bacterial condition.

Certain carbohydrates are not absorbed readily into the system. Consequently, carbohydrates in the dog's diet should be limited to the two sugars and to cooked starches for these are readily acted upon by enzymes. When these are fed, with sufficient protein, they form an important place in the diet of the dog.

Cellulose, hemicellulose and pentosans should be avoided.

Mineral Salts

Calcium and phosphorus compose a large percentage of the body. They are needed in largest amount. If these two and iron and iodine are present, the remaining ten mineral elements usually will be found in sufficient quantities. Regular diet usually furnishes the ten others in sufficient quantity (copper, potassium, magnesium, chlorine, fluorine, sulphur, lithium, barium, manganese-aluminum, and silicon). But in most cases the other four must be furnished specially.

Mineral matter is found in the ashes after the body is burned. It constitutes about six percent of the body weight. To feed mineral salts direct aids greatly in the dog's growth and health.

Calcium is found in the bones chiefly, phosphorus in the nerves, iron in the red blood corpuscles.

Common salt contains much sodium; iodized salt both sodium and iodine; fish much iodine; calcium carbonate much calcium; eggs and milk furnish phosphorus; egg yolk, raisins, and spinach supply iron.

CALCIUM is contained mostly in bones, teeth and the bloodstream. It fills up bones and teeth, aids in contractility of muscles and response of nervous tissue to stimuli; it aids rhythmic heartbeat and prevents over-excitability. If it is lacking in the body, rickets, decayed teeth, irregular heart action and softening of bones may occur.

Calcium is found chiefly in the following foods, about in the order given: milk, turnips, American cheese, cauliflower, carrots, navy beans, spinach and oranges. Calcium lactate can be had at the drug-store as a prepared product to supply calcium deficiency.

The calcium triplets are worthy of mention. Calcium chloride being irritating, is not as preferable as calcium lactate, which perhaps in turn is not as preferable as calcium gluconate, a salt of glutamic acid. It is useful in the treatment

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of convulsions, milk fever or eclampsia (nursing fits), running fits or canine hysteria, and weak bone structure. Particularly it is recommended for nervous bitches in whelp. It can be administered in tablet form daily or for prompt and best results, by injection.

Pure calcium as such (bones come near to this condition) is little assimilated; it passes out thru the bowel unacted upon. Other food elements, particularly vitamin D, must fuse with it for absorption into the blood stream.

PHOSPHORUS is the second common mineral element in the body and is found in every cellular structure, bones, and teeth, and is necessary in the growth of practically every cell. It is a bone and muscle-building element. Its absence or its deficiency results in retarded growth, rickets and loss of appetite.

Phosphorus is found chiefly in the following foods about in the order given: buttermilk, salmon, milk, chicken meat, plain corn, beans, graham flour, peas, rolled oats, beef-liver, eggs.

IRON, the not as common as phosphorus, is just as necessary for the activity of the cells. It is found in the hemoglobin of the blood and in the chromatic of all cells. It aids in cell reproduction and carries oxygen to the tissues; thus, the presence of iron is important in fertility and sexual activities. Its deficiency results in anemia, lack of hemoglobin, lack of cell growth, increased respiration, and heart action.

Iron is found chiefly in the following food in order—clean meat, spinach, beef-liver, beef, fresh corn, rhubarb, beets, tomatoes, raisins, eggs and cauliflower.

IODINE, the fourth important mineral element in the body is found in the thyroid gland and in thyroxin. It regulates energy and basic metabolism. Its deficiency results in retarded growth, changes in hair and skin, goiter, the birth of the young hairless, apathy, dullness and fatness.

Iodine is found chiefly in the following foods about in the order given: deep sea fish, oysters, salmon, cod, halibut, iodized salt, and sea kelp.

Vitamins

Vitamins are now the chief topic in food discussion. The body does not produce them; they must be brought into the body and then are stored in the body for use as needed.

Their discovery is recent and their exact nature is still unknown. They are chiefly chemical substances which do not give nutrition or substance but the necessary help in growth; their absence prevents growth or permits certain diseases to flourish.

D—SPECIFIC FOODS AND THEIR VALUES

What Should be Fed?

What should a dog eat? He is at his owner's mercy. He can not choose his food but must eat what is offered. Therefore, his master should feel the pangs of a guilty conscience when his dog is ill from a bad stomach. Feed him properly; he will repay well in good health and active companionship.

It may be true that the dog eats all

Five main vitamins are known to date—A, B, C, D, E. Much has been written about them and their importance is not exaggerated but the extent of absence in ordinary foods is exaggerated.

It is the fashion with some authorities to dilate, and rather bore-somely too—page after page about vitamins until the reader succumbs in despair to a maze of theoretical this-and-thats, few if any of which can help him when a few minutes later, he steps into his kennels to feed the dogs.

A reasonable variety of foods, with frequent changes, can give a balanced diet, containing all necessary vitamins, for the best health of the dog. The digestive health of the dog requires four vitamins—A, B, D and E. Surrendering the pages of theories to clinics, where only they have value, we say that a sufficient abundance of all four vitamins are obtained by feeding one or more of the following, with changes and variations once or twice weekly:

Fresh meat, to include by all means liver, heart, kidneys, and fat, particularly if the animals have been grass-fed; milk, eggs, good grades of canned dog food and biscuit food, with supplements of cod liver oil and yeast extracts from time to time.

Fresh raw meat remains the dog food par excellence the cost and difficulty in obtaining must be considered. Liver, however should be fed twice a week for this gland furnishes more vitamins and a greater variety than any other single food.

Manufactured preparations strong in mineral elements such as calcium phosphate, and containing certain concentrates such as rice polishings, buttermilk paste, yeast, egg yolk, cod liver oil and the like are tasty and acceptable to the dog and a teaspoonful of it in the food furnishes all the necessary vitamins.

A deficiency of vitamin A is suggested in infections of the mucous membrane, lack of body growth, and chronic discharges from the eyes. Feeding cod liver oil or halibut oil furnishes A speedily and generously.

More vitamin B can be given beneficially in cases of loss of appetite, nervousness, running fits, and paralysis. Injection of B1 is now specific for quick elimination of "jumps." Niacin, a B vitamin, is an effective treatment for black tongue.

Rickets usually can be diagnosed completely as attributable to a lack of vitamin D.

The dog, unlike the human, produces a sufficient supply of vitamin C for his needs.

kinds of food; but the dog is the most obliging person on earth; he always wants to be a good fellow; he is a politician; and to please you, he will eat something he dislikes.

Table scraps long have been the dog's commonly considered diet. Fortunately that diet is passing away. In the end it brings disorders and ills. The present availability of manufactured dog foods, most of them ready to be served, has placed

table scraps on the undesirable list. Prepared foods are evenly balanced, scientifically prepared, easily gotten, easily carried on a trip, quickly served, free from quick spoiling, and above all, they are cheaper in price than even the refuse at the local butcher shop.

"My dog has never eaten anything but table scraps, and look at him—näie and hearty," exclaims the dog owner (usually of a mongrel dog). True and not true. Outwardly the dog may have every appearance of good health but inwardly have there been built up the stamina, resistance and hereditary virility so desirable?

Basis of Valuing Dog's Diet

A diet may contain all the various food elements such as protein, carbohydrates, fat, minerals and vitamins and yet not be a desirable food. In other words, the chemical analysis is not the final basis.

The nutritive value must be taken into consideration. Just how much of the food is assimilated into the system and how much passes out thru the bowels as roughage and indigestible must be considered. An advantage goes to the dog food that produces hard stools; ask any cleanup man.

There is still another and important factor—the generation test. The diet particularly for bitches, must produce lactation (milk in breasts), growth, strength, and above all, must add to the reproductive ability of the bitch. This last mentioned must include easy whelping of fairly large litters possessing stamina. Some diets may fatten the bitch and build her up, yet not furnish the necessary food value for the puppies in the womb.

A food fed exclusively to three or four generations, each of which reproduces itself easily and vigorously, must be regarded as excellent.

A BALANCED DIET FOR THE DOG SHOULD BE CONSTITUTED APPROXIMATELY AS FOLLOWS: 70% CARBOHYDRATE (STARCHES), 22% PROTEIN, 5% FAT, 2.5% ASH, 0.5% FIBER.

Meat is Chief in Canine Diet

Biologically dogs are carnivorous but like man, they are omnivorous; environment greatly changes the diet. However, meat has been the traditional food for dogs; the teeth and mouth of the dog are designed for holding and tearing meat and for crushing bones.

The dog's digestive system anatomically is especially suited to the digestion of meat. Inexpensive cuts of beef are perhaps to be preferred because they contain suet as well as lean meat and suet is excellent for teeth development. Also, suet tends to create a healthy skin and the highly desirable lustrous oily coat.

MEAT in the ration of the matured dog should be not less than one-half or one-third of the meal, whether fed direct or as in dry cereal or biscuit food, indirect. The proportion of meat in the diet is larger for puppies or growing dogs and well can constitute two-thirds of their ration.

PORK is not desirable meat for the regular diet but can be fed occasionally.

VEAL, MUTTON, BEEF AND HORSE-MEAT—all can be fed. There is no partic-

ular preference except that the meat of animals whose chief food is growing grass, contains more of the essential minerals and vitamins.

On the whole, we believe that meat fed in lumps is better digested than when minced or ground, as the lumps stimulate the flow of gastric juice.

Meat should include not only the muscle fiber but also glands, blood and tissues.

The glandular and internal organs such as the heart, pancreas, liver and kidneys and the intestines themselves are rich in vitamins. Dogs coming upon a carcass relish the stomach and its half digested contents of grass and the like, because it gives them certain mineral salts and other elements lacking in their usual diet.

Should meat be fed raw or cooked? I think raw meat is liked better by the dog and that it is preferable because none of its values have been taken out of it by cooking; however, to kill germs in the meat, it should be brazed or slightly cooked.

FRIED MEAT should never be fed to a dog; if cooked meats are fed, they should be roasted, boiled or broiled. However, if cooked meat is fed entirely, no harm will result.

FISH, of course, is included in proteins. Do not hesitate to feed fish in order to stimulate the appetite. Salmon and cod especially are recommended. Fish meal is an excellent addition to the diet.

SOFT-BOILED EGGS are superior to raw eggs when fed without other food. Raw eggs should not be fed alone. For the sick dog, for the dog that has poor appetite, for the whelping matron, the yolk of eggs and meat broth are a most excellent diet. In case where dogs will not eat, these should be forced down the throat.

LIVER is rich in most vitamins and can be fed boiled at least once a week.

Cow's tripe, that is, the paunch, is nourishing food for puppies and grown dogs; it should be thoroly cooked.

Milk, Cheese, Eggs

Milk is excellent for dogs as it is for humans. Cow's milk is one of the best foods for puppies and grown dogs. Goat's milk is especially nutritious, being rich in iron, calcium, and phosphate, and easily digested and is recommended for puppies and ailing dogs. Milk can be discarded for grown dogs, however.

Give the grown dog a drink of milk with his light morning meal. Buttermilk and sourmilk are excellent drinks and somewhat laxative. Evaporated milk and condensed milk are satisfactory as milk in its natural state; evaporated milk is preferred to condensed milk.

The feeding of milk does not cause worms and the feeding of garlic may occasionally drive out worms.

Cottage cheese is excellent, in fact, few other varieties of cheese can be recommended for the dog. Ice cream is a beneficial food.

Dogs like eggs but on the whole, eggs are not desirable to any great extent; the albumin or white, either raw or cooked, is not easily digested; raw, it is almost indigestible. Dried whole eggs are excellent

FEEDING THE DOG

(never more than 5% by weight, of the meal).

Bones

We are guilty of rank heresy when we say that bones are not desirable food for dogs. They have little nutritive value except for calcium; they are taken into the stomach in splinters and chips, only to cut, irritate, perhaps impact (stop up) the intestines.

Their chief value is in cleaning the dog's teeth and gums, giving exercise to his jaws and contentment to his mind. The best builder of strong jaws and teeth is not bones and chewing but proper whole-some food.

Bones strengthen the dog's jaws, develop biting power, clean his teeth, preserve the gums and take away bad breath. Let him chew to his heart's content upon a bone; he should have a large bone with meat on it, preferably a well cooked bone to lessen splintering, at least twice a week, whether he be a toy dog or a large dog.

Chicken bones, rabbit bones and fish bones should never be fed. The danger arises out of the smallness of the bones and also out of another condition, that these bones, especially chicken bones, break off into sharp points as the dog chews them; these points tend to catch in the throat or tear the intestines. However large these bones, they should not be fed. This applies with some force to pork bones as they also are somewhat brittle and break into sharp points.

Some dogs are utterly unable to eat bones; vomiting and intestinal disturbance take place about twenty-four hours after the bones have been eaten.

Carbohydrates and Fats

Macaroni and spaghetti are excellent starchy foods and seem to be somewhat easily digested. They are most excellent especially in winter, for fattening dogs. A touch of either tomato or celery can be added to it.

Whole wheat, cornmeal, and rice are good cereals. Whole wheat is best fed as hard or stale bread, oven-dried, just before being fed. It tends also to check diarrhea.

Oatmeal is rich in nitrogen, fats and mineral. It should be cooked thoroughly, else it causes stomach trouble and skin disease, and tends toward excessive urination.

Tomatoes, spinach, lettuce and carrots are recommended vegetables. They contain most of the known vitamins. They can be fed raw or cooked.

Not a few dog owners complain that their dogs will not eat vegetables. Dogs do not relish vegetables; they eat them only when they are very hungry or when the vegetables are mixed with meat and the like. Vegetables are to be fed to a dog not so much for nourishment as for vitamins. They should always be a minor portion of the diet. They give little nutrition; they build little; they are medicinal and corrective.

Some of their value lies in the mechanical action in stimulating intestinal movement, particularly as roughage.

Bear in mind that dogs can be fed without any vegetables whatever and not suffer in health.

"I KNOW I SHOULDN'T EAT THIS, BUT IT TASTES GOOD"



Canned Dog Food

Until about the year 1920, what might be termed manufactured or commercial dog food consisted entirely of "dog biscuit," now known as dry food, biscuit food or cereal food.

Beginning about the year 1920, canned dog food or meat dog food in cans was offered commercially. It is not to be understood that a pound of canned dog food is a pound of meat. The moisture or water content may vary from 40% to 70% in weight.

The contents of a can consist of meat (either beef or horse), cereals, cod liver oil, perhaps wheat or corn ground up, some charcoal, iodized salt and ground bone. On account of the low meat content canned dog food more correctly should be termed canned cooked food.

The great demand for canned dog food has brought into the field many brands of which some are not nutritive or wholesome. However, the standard brands are well prepared and are excellent for the dog. A dog can be maintained indefinitely on them.

Canned meat has many advantages—it is convenient, will not spoil except that it may freeze, can be taken on a trip, and in the matter of price, is very economical.

In 1937 the B.A.I. (Food & Drug Admin.) issued order 211, amending No. 10, prohibiting the phrase "fit for human consumption" on labels of canned dog food. Federal inspection is of the meat or meat by-products only.

So great is the popular demand for canned dog food, particularly from owners of pet dogs, that this particular product leads most other canned products of the grocer's in gross sales. Approximately a total of \$70,000,000 retail sales were made in 1941.

NOTE—Effective March 2, 1942, due to war requirements, tin was no longer obtainable for cans; and the manufacture of canned dog food ceased immediately. This situation still exists (March, 1945).

Dog Biscuit

Dog biscuit has been the traditional manufactured food for dogs; it was originated in England about 1870, at first being the hardtack or biscuit which remained after a sea journey.

The use of the term biscuit is based upon the large proportion of flour and other cereals. A better term is dry food.

A biscuit is usually the large size. The broken-up size is called kibble biscuit. The only difference of course is in the size. Puppy size usually is granulated. Cubes are pieces about one-half-inch square and deep. Meal is pulverized or mealy.

Various elements go into the making of commercial dog biscuits by the baking process.

Dog biscuits are best fed with meat and cooked vegetables.

A biscuit a day will keep yellow teeth away. Biscuit is an excellent teeth cleaner for dogs.

Damp and stale biscuit are unwholesome; a short heating in the oven should be given damp biscuit.

Where there are many dogs to be fed, the use of biscuit reduces the food bill greatly. It can be mixed with vegetables, with canned dog food, with fresh meat, and cooked together for an appetizing healthful dish.

"My dog won't eat dog biscuit," complains almost every dog owner. The dog is a wise being; he soon learns how tender is his owner's heart. He will delay, he will wait, he will not notice the biscuit and too often his wife succeeds—he receives fresh, juicy meat. In these cases, have no mercy on your dog; let him play his waiting game. You will do a favor to his good health by letting him become hungry; then he will eat the biscuit with relish and with benefit.

Dry Food Formula

Frequent inquiries come to us for a formula for preparing biscuit or dried food "at home." We usually reply that it is inadvisable to attempt a homemade formula, inasmuch as commercially manufactured foods can be obtained at economical prices, cost less than homemade food, are prepared usually under more sanitary conditions, and have more probability of constituting a balanced diet with the required vitamins and minerals, enzymes or ferment, amino and lactic acids.

The first dog biscuits were made solely of wheat flour with or without salt; later they consisted of wheat flour plus refuse meat. Today practically all biscuit food contains sound flesh obtained from healthy animals.

A biscuit food containing waste flesh tissues or cracklings is not to be recommended. Cracklings (or tallow residue) consist of what's left over after boiling and rendering into fat the muscle fibers, gristle, cartilage and skin fragments, usually from animals that have died from disease.

A well-known and nutritious biscuit food has the following constituents (we quote word for word from the sales circular):

"Stripped of all vague or mysterious terminology, we present in everyday language the common English names of the ingredients used:

"Meat and Bone Scraps, Wheatus, Cereal, Oatmeal, Soybean Oil Meal, Fish Meal, Yellow Corn Meal, Dried Skimmed Milk, Dried Buttermilk, Barley Malt, Liver Meal, Blood Flour, Alfalfa Meal, Wheat Bran, Dried Beet Pulp, Wheat Germ, 2% Limestone, ½% Salt, Cod Liver Oil Concentrate."

Cod Liver Oil

Cod liver oil is a well established part of the dog's diet. It can be given to puppies at an early age, let us say at two months. It can be fed in the food or by spoon in liquid form, altho now it is available in capsules and powder.

It can be fed thru puppyhood and the growing age and on thru adulthood. It furnishes bone growth, tends to lessen the liability toward rickets, and in general, serves to aid in building up stamina.

Most dogs eat it greedily. Of course, too much of it can be given. It can be omitted every third day.

Cod liver oil is obtained from the liver of the cod fish. Crustaceans eat seaweed, which in turn contains iodine and "stored sunshine." The codfish eats the crustaceans. The surplusage seems to center about the liver and consequently the oil is obtained from the liver of the cod.

Charcoal Absorbs Gases

Charcoal is desirable, not to sweeten the stomach as is said but to absorb gases. Charcoal acts only mechanically; it is not digested but passes out of the bowels intact. Charcoal is gas thirsty; it deodorizes by absorbing gases. In the stomach and especially in the intestines, charcoal absorbs gases caused by fermentation, especially carbon dioxide.

Feed it once weekly, not in drinking water, but in the food in small lumps, or in powder. It is to be recommended as an aid in lessening flatulence, dyspepsia or indigestion, diarrhea and its opposite, constipation. Feed it just as soon as looseness of bowels indicates later diarrhea.

Articles Not Beneficial

Fermented or sour bread should not be fed. Stale and dried bread, especially whole wheat bread, made crisp in the oven is to be fed.

At no time should the following foods be fed to a dog—sweets, puddings, fish bones, chicken bones, rabbit bones, pastry, candy and chocolate.

Fried meat, smoked meat, spiced or heavily seasoned meat should not be fed.

Polished rice is injurious. Potatoes should be fed sparingly and eating them constantly may produce eczema. Dogs affected with eczema or other skin diseases should eat decreased amounts of starchy food.

Avoiding Poisoned Food

The eating of poisoned food is always a danger to be feared. The dog poisoner, having a body like as you and I but a soul as foul as a rotted cabbage, is abroad when least expected.

Feeding the dog always at the same time, at the same spot, and out of the

same dish will lessen the danger. Keep him properly fed and he will be less inclined to eat food proffered by strangers. The same person or persons always should feed him.

He may be trained to refuse food from strangers. Let a stranger offer him food, then punish him for attempting to take it. As he approaches food on the street, in the alley or wherever it may be, warn him away; have a stranger place food before him while you are hiding and out of his sight; come upon him as he approaches it, frighten him and give him a punishing slap.

Water for the Dog

Puppies need little drinking water as their diet includes plenty of moisture. Further, it should not be available to them at all times as they drink too much and thus are inclined to digestive trouble. Water four times a day for puppies up to six months is often enough. It should be taken away from them immediately after they have had their fill.

After the age of six months and to twelve months, water should be available three times per day; thereafter two times daily. Give fresh water each time.

Half the weight of a dog consists of water. It is an all-important part of the tissues, the secretions and the general body functions; and as in humans, it is highly necessary to aid in carrying the nutriment thruout the digestive system and in disposing of waste cells.

When the dog is very heated, let him have just a few laps; after a time, he can drink more. Do not give water just before eating time.

Drinking pans that rust should be avoided. Enamelware or crockery are advisable materials for both drinking and eating dishes. Keep the water out of the sun and out of dusty places. Do not put any medicine or the like into the water. The best thing to put into the dog's drinking water is pure water. If possible, use a water pan that can be raised above the

YOUR DOG PRETENDS HUNGRINESS



floor, in order to avoid dust and other settling.

Thirsty dogs know nothing about germs and bacteria; they drink stagnant, green-scum covered, foul water; and it is harmful beverage.

We must disagree with the statement that water should be available at all times for grown dogs. They drink too much and too often when water is available at all times. The result is digestive trouble. In cases of diarrhea, intestinal inflammation, gastric ulcers, and the like very little water should be given. It is safe to advise that in all digestive disorders, little water should be given, as the passage of the water only tends to irritate sore membranes. Milk or broth soups may be substituted for the time.

The food dish and the water dish always should be above the dog's suspicion. These he should approach freely and without hesitation. We have never felt kindly toward the method of giving or mixing medicines in the food of the dog. He quickly resents this and thereafter, eats hesitatingly in fear or suspicion.

E—SPECIAL DIETS

Diet for Sick and Ailing Dogs

The gastric juice of the dog's stomach is strongly acid in its reaction, as is common in all meat-eating animals. Hence, if your dog is ailing in his appetite, the cause likely is gastric catarrh. He vomits; he refuses to eat. Give him milk or broth and place lemon, orange or tomato juice or plenty of pepsin in it.

Eliminate most starch foods, feed small quantities of raw meat or tripe in small pieces, and have the dog rest at least two hours after eating.

For the convalescent dog or the dog of weak stomach, a daily enema is recommended. Scraped or chopped raw beef, boiled lamb, small quantities of vanilla ice cream, beef juice, and the like are recommended items of the diet.

When the secretion of gastric juices

lessens or changes, the power to destroy infectious bacteria is lessened. Nervousness results and this may be a beginning factor in hysteria. Less food should be fed.

As the brood bitch nears the time of whelping her puppies, she prefers soft sloppy foods. She does not swallow thick chunks. During the two weeks before whelping time, her food should be cut or chopped into small pieces.

In almost all conditions of illness, not much water is to be given. Spices should be avoided. Soft boiled eggs, minced liver, barley broth can be offered. Spiced and salted food should be avoided in sickness and in health alike.

Ground liver, cooked veal and raw meat in small quantities also can be fed to convalescing dogs, on the theory that food must be easily digestible.

If the dog's pulse is low, heart weak, and death is threatened, give whiskey and milk in equal parts as emergency aid.

Vomiting Aids Sick Dog

Vomiting is not to be despised either in dog or humans. A greater practice of it would be advisable for ourselves. The strong muscular coating of the dog's stomach makes it easy for him to vomit. Also the nerve center in the brain controlling the act of vomiting is highly developed in the dog. The soft palate also is short.

Let your dog vomit to his stomach's content; he is a greedy eater and the vomiting relieves a bad condition or frees his stomach of injurious substances. If he eats grass, he does so chiefly for the sensation and the resulting vomiting.

The eating of his own vomit by the dog is not undesirable. Let him do so. This food already acted upon by the gastric juice, is easily digested. Mothers at times vomit their food for the young to eat.

To check vomiting, give bismuth sub-gallate.

Dogs eat grass chiefly as a cure for too much bile. The fibrous parts of the grass irritate the mucous membranes, and then are vomited, having particles of bile clinging to them. Let the dog eat as much grass as he pleases, especially tough, rough wide stalks.

Gulping the Food

When a dog is eating, even tho he is a one-man dog and you are the one man, do not place your hand or face near his face. At eating time, keep away from your dog. If you do not and he growls at you, do not punish him. His ancestors and not he are growling at you. For countless centuries his ancestors were half-starved most of the time and when they did come upon some game or other food in the woods, the one who had it fought to keep it as a matter of life or death by starvation.

This condition explains why almost all dogs gulp their food. When game was come upon, the dog was required to devour his portion quickly lest the others take it from him. The gulping habit he has brot with him into man's civilization.

We have set forth the very short time food remains in the dog's stomach. Saliva in the mouth gives little aid to the gastric juice in the stomach. Hence, it is not important in the dog's diet. The dog masticates or chews little. Food is separated mostly in the back of the mouth by the

scissor-like molar teeth and bolted or gulped as soon as the pieces are small enough to be swallowed.

Value of Chewing

Large pieces of food which must be nibbled or chewed are desirable because the chewing cleans the teeth and removes from the gums the matter that harbors pyorrhea and other germs. Chewing as an aid to digestion matters little. Dry food requiring chewing cleans the dog's teeth and gums. Bones aid in "splintering off" the flinty film of tartar.

The Dog Without Appetite

As long as your dog eats heartily, he can not be seriously ill; when he does not eat, he cannot be well. In case of doubt regarding a dog's stomach condition, feed him little or not at all for some time. A short hunger period will prove a tonic.

If the dog is off-feed, has no appetite, and is listless, do not feed him for twenty-four hours. You will not be inflicting a hardship but a favor. In truth, a full day's fast about every two weeks for a grown dog is the finest kind of medicine.

To coax the off-feed dog to eat, offer malted milk tablets or any like sweet food. A little sirup mixed with the food is a temptation. Canned fish may whet the appetite.

It is difficult to starve a dog; dogs have gone for a week without food and have not suffered; in a few instances they have been known to be without food or water for four weeks, and in one extreme case, fifty-seven days, and have been brot back to normal condition.

You will regret your kindness if you feed your dog from the table as you are eating or if you permit him in the dining room while you are eating; he will pester you until he becomes a nuisance and you will yield to his begging.

Diet for Pregnant Bitches

An extensive use of vegetables in the ration of the pregnant bitch may tend to overload the intestines. Plenty of meat, usually lean raw meat, is recommended.

During the last few days of pregnancy, bones should not be fed.

Milk of magnesia should be given to the pregnant bitch twice each week during the entire period of pregnancy. Also calcium phosphate, calcium lactate, calcium gluconate (tablets or injections), or any good mineral conditioning powder can be given during pregnancy.

These recommendations well can be applied to the nursing bitch also.

F—DIET FOR PUPPIES

Weaning and Feeding

The puppy at its mother's breast suckles when it pleases. Puppies are weaned at about the age of six weeks; the mother attends to this inasmuch as at this age the puppies' teeth begin to bite hard and the mother feels the pain.

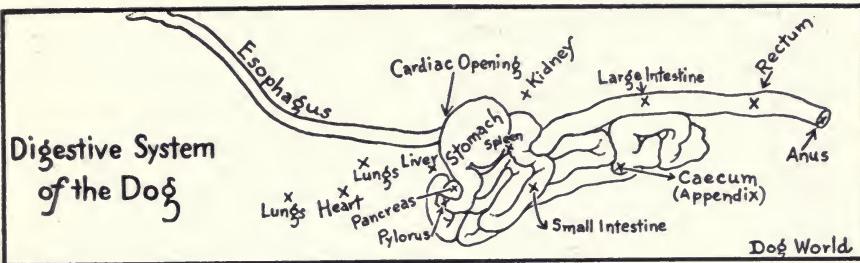
Weaning may begin as early as the age of four weeks, or it may be prolonged to seven and eight weeks of age.

Shortly before the age of five weeks, some soaked toast, or crust, some beef

broth, and some softboiled eggs should be given in small quantity to the puppies so that the weaning will not be too sudden change. A very small quantity of cooked chopped meat can be fed.

The bitch's milk is richer in food value for the puppies than is cow's milk; therefore, the change should be made gradually. To each pint of cow's milk add a level teaspoonful of sugar of milk and the yellow of one egg. A teaspoonful of lime water added, lessens the tendency of cow's milk to "belch" in the puppy's stomach.

FEEDING THE DOG



Finely ground meat with very little fat in it, rubbed on the whiskers or muzzle as early as the age of three weeks teaches puppies to lick it off and be anxious for solid lean meat by the time they are six weeks old.

Feeding, as the author points out in his work *Principles of Dog Breeding*, does not bring oversize; it may bring fatness. Size is a mould determined by heredity. The bone structure is determined by the parent and not by the diet.

"Stuff" a Puppy

It is a safe rule to stuff the puppies every day until they are well on the way to maturity. You can hardly overfeed a puppy. Every day the puppy is growing almost visibly; there is tremendous need of building increased stamina, which must be obtained thru food and exercise. It is good policy to "feed often—not too much at a time."

Beware of bullies in a litter. Feed the puppies individually; if they are fed in a group, the stronger ones push the weaker ones away.

To feed puppies individually, use a trough partitioned so that each puppy is placed in a stall of its own.

Nursing "Orphans"

Evaporated milk and water in equal quantities with some added cream mixed in with an egg beater, is excellent for puppies removed from the mother's breast at an early age. Puppies can be alternated between the mother's breast and a pan of milk.

If nursing puppies lose their mother, powdered milk can be used but should not be diluted greatly. If cow's fresh milk be used, cream should be added to bring the

fat and protein content more nearly to that of the bitch's milk. See also page 16.

Feed from a nursing bottle, using the rubber end of an "eye dropper" or if puppies are very small, insert milk in mouth with eye dropper. Feed at a temperature of about 90°, every two to three hours.

Various Digestive Puppy Ills

If young puppies vomit, likely it is due to a change in the mother's milk or to digestive disturbances in the puppy itself. Remove the puppy from the mother and give peppermint water.

Constipated puppies can be taken care of easily by giving a few drops of milk of magnesia or mineral oil. If castor oil is used, it should be followed by mineral oil within a few hours. Constipation is dangerous in puppies and should be taken care of immediately, else it may lead to death. Also check rectum; the opening may be caked.

Diarrhea in puppies should be stopped promptly. No water at any time. Castor oil, preferably with a few drops of paregoric, should be given. Give boiled milk for drinking. Put kaolin in it—an even teaspoon per half pint.

Barley water or thin oatmeal is useful in this and in almost all cases where there is intestinal trouble.

Dysentery, which is evidenced by loose, bloody stools, is serious. Follow the suggestions under diarrhea and add small doses of bismuth subgallate.

A test for acidity in the milk is made by dipping a strip of blue litmus paper in milk; it turns a red color if acidity is present.

Some dogs, like some humans cannot tolerate milk.

G—HOW OFTEN TO FEED

Time Required for Digestion

Eighteen hours is the average time for food to pass thru the digestive system of the adult dog. Pap or soup mixtures begin to pass out of the stomach in about five minutes and within a half-hour the stomach is entirely emptied. From the stomach the food passes to the small intestine and from the small intestine into the large intestine, to lodge as refuse in the colon until it passes out thru the rectum.

Coleson in Paris in 1931 found out by

radiographic tests that food in the stomach of the normal dog required 15 to 28 hours to pass entirely out of the stomach.

Pap is entirely out of the small intestine within six hours, beginning to leave about three hours after the pap is received.

Solid food passes more slowly. After it is in the stomach for an hour, it begins to flow in the small intestine. After ten hours the stomach is entirely emptied.

The little intestine retains the food for about ten hours. The colon retains the

food for twelve hours. These period overlap, or a total period of about eighteen hours.

If a normal meal be fed early in the morning, and a second meal at noon, the second meal can be taken out of the stomach in the evening almost in its condition when fed. Both stomach and small intestine should be empty when feeding is done; after an hour, some of the food is already out of the stomach into the small intestine.

The greatest activity is during the first five hours; after this, the activity slows until about the tenth hour and by the eighteenth hour, digestion is completed. About two hours more is needed for the undigested and the refuse materials to be ejected by the bowels.

Little digestion takes place in the dog's stomach. While food is being digested in the intestines, additional food entering the stomach, remains there, giving an added burden and not nourishment.

All this indicates that one meal per day is advisable for the adult dog and that frequent meals result in digestive disturbances and consequent ills.

Mistaken Kindness

A kind heart leads the owner to feed his dog too often. Let not the dog's pleading liquid eyes conquer you; he will seek to deceive so that you think him faint of hunger; he will beg for food and yet more food to his stomach be crammed. It is a never-tiring game with him; the weakness of a dog is his stomach; you can win his heart and soul and devotion by way of his stomach; much of the pedagogy of training a dog is based upon influencing him thru his desire to eat.

H—QUANTITY TO FEED

How Much Shall be Fed?

The quantity of food to be fed a dog depends on the breed, age and manner of life. Dogs having much exercise, especially outdoors, need about forty percent more food than the amount needed when they are inactive. Where milk is indicated, broth, soup or other similar liquids also can be substituted.

Quantities for Small Breeds

The menu noted hereinafter for toy puppies is fully applicable to puppies of all breeds.

Toy dogs embrace the following breeds—chihuahua, English toy spaniel, griffon (Brussels), Italian greyhound, Japanese spaniel, maltese, Mexican hairless, miniature pinscher, papillon, pekingese, pomeranian, pug, toy poodle, toy Manchester, Yorkshire terrier, affenpinscher and amertoy.

What to Feed

For dogs classed as TOY DOGS the quantity to be fed is:

From six weeks (weaning time) to four months, feed four times a day.

Feed one-half cup of milk and cereal or "baby food" at each of two meals and for each of the other two meals about one and one-half ounces of solid food each meal.

If you love your dog, do not feed him too often. It is an act of kindness to feed a grown dog only once a day. Better health, a good appetite, clean teeth, clear eyes, pure breath and lively movements will be the happy results.

Daily Hour Schedule

Dogs from six weeks to ten weeks old regardless of breed, may be fed five times a day; from ten weeks to four months, four times a day; from four months to eight months, three times a dog; from eight months to fifteen months, twice a day; thereafter once a day.

Few breeds are fully developed until the age of fifteen months; the larger breeds are not entirely matured until about the age of two years. A dog attains his full height before he attains his full weight and matured or finished growth.

The hours for feeding, whether the dog be fed one or five times each day, should be the same hours day after day. After a time, the dog will know almost to a minute just when feeding time is at hand. He is a good clock as well as a good watch.

If your dog is a watchdog, feed him not later than four o'clock in the afternoon, for a dog with a full stomach is a sleepy dog. If he is inclined at night to bark to the neighbor's annoyance, feed him heavily in the evening.

If the dog is excited or very exhausted from exercise, let him rest for a half hour before feeding. Do not feed dogs within three hours before hunting, auto riding or much exercise.

A house dog, especially while being housebroken, should be taken on his daily walk immediately after feeding, as then nature aids him in relieving himself.

From 4 to 8 months, feed three times a day.

Give a half cup of milk and food for one meal and three ounces of food for each of the other two meals.

From 8 to 15 months, feed twice a day; one meal, a half cup of milk and food, and for the other meal, four ounces of food.

After 15 months, feed once a day, about six ounces solid food, giving milk and bread or cereal for a light lunch in the morning. Midway between meals, a biscuit can be chewed on.

Quantities for Medium-Sized

The medium-sized breeds include the following breeds—beagle, bedlington terrier, Boston terrier, cairn terrier, dachshund, dandie dinmont terrier, foxterrier, French bulldog, harrier, Irish terrier, Manchester terrier, poodle, schipperke, schnauzers both miniature and medium, spitz, Scottish terrier, sealyham terrier, shetland sheepdog, cocker spaniel, Welsh terrier, West Highland white terrier, whippet, puli, Norwich terrier, border collie, and Lhasa apso.

For the medium-sized breeds and small breeds larger than toy breeds (maturing 15 to 30 pounds), the following schedule can be maintained:

6 weeks to 4 months, feed four times a

day—a three-quarter cup of milk and food two times and four ounces of food for each of the other two.

4 months to 8 months, feed three times a day—a large cup of milk once and seven ounces of food twice.

8 months to 15 months, feed two times a day—a large cup of milk with toast, cereal and commercial dog food, for one meal, and a generous twelve ounces of food for the other meal.

After 15 months, feed a drink of milk in the morning with light food, and a pound of food in the late afternoon.

Feeding Large-Sized Dogs

The large breeds (31 to 60 pounds) include the following breeds—Afghan hound, airedale terrier, Belgian sheepdog, bouvier de Flandres, briard, bulldog, bull-terrier, Chesapeake Bay chow chow, collie, dalmatian, foxhound both the American and the English, greyhound, wirehaired pointing griffon, kerry blue terrier, Norwegian elkhound, Old English sheepdog, otterhound, doberman pinscher, retriever, saluki, samoyede, setter (English, Irish and Gordon), spaniel (clumber, field, Irish water, springer and Sussex), Staffordshire terrier, American water spaniel.

For the large-sized breeds (maturing 31 to 60 pounds) the schedule to be maintained is as follows:

6 weeks to 4 months old, feed four times a day—one and one-half cups of milk and light food two times and eight ounces of food for each of the other two.

4 months to 8 months old, feed three times a day—two cups of milk with light food once, and twelve ounces of food twice.



• Smooth fox terrier puppies "at it"

8 months to 15 months old, feed two times a day—one and one-half cups of milk with light food for one meal and twenty ounces of food for the other meal.

After 15 months, feed once a day, up to two pounds of food but give a drink of milk with light food in the morning.

For breeds maturing 61 to 99 pounds, increase the foregoing ONE-HALF. These breeds include Scottish deerhound, giant schnauzer, great pyrenees, borzoi, bloodhound.

For extra large breeds (100 to 200 pounds), such as dane, mastiff, Newfoundland, St. Bernard and Irish wolfhound, these quantities should easily be DOUBLED.

The frequent specification for milk is not to be interpreted that it is essential. Broths, soups, and other moisture can be substituted. Many puppies are reared without a drop of milk after six weeks of age.

I—FEEDING EQUIPMENT

Keep the food dish clean. Do not permit grease to harden in it. Wash it daily with hot water. Keep the scum from hardening on it.

A heavy flat dish, with the outside bottom wider than the top rim, can not be toppled over and can not be moved easily. (See illustration next page.)

Do not use the food dish as a water dish. Remove the food dish out of sight as soon as the dog has finished.

Dogs of long ears such as setters and spaniels, should eat out of dishes of small opening.

After a dog has eaten all he cares for, take away the food. Do not have food available to him at all times; otherwise, he will not have an appetite at any time.

Individual feeding dishes lessen the opportunity for puppies, usually the bullies of the litter, to overfeed and to have such stuffed paunches that, particularly if infested with round worms, they sit long on their haunches, their thighs extended outward, which habit intensifies cowhock tendencies.

J—MISCELLANEOUS AND CONCLUSION

A change in dog food or a new dog food usually makes the dog laxative for about five days.

Any dog food, however good, becomes tasteless after a time; every fourth day, change the diet.

When introducing a new food, have the dogs hungry, else they will not eat it as they have an instinctive suspicion of a strange eatable.

One pound of powdered milk mixed with ten pounds of water gives the consistency of original skim milk (milk from which the fat content—cream, has been removed). Feed this to growing puppies if fresh milk is not obtainable.

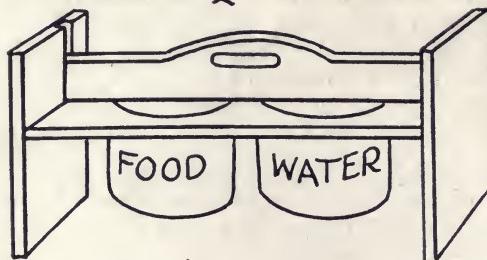
Dry or powdered milk has an abundance of lactose, which in turn fights bacterial action from decay in the colon.

Estimated cost of proper feeding of fifteen dogs of a small-to-medium sized breed is \$3.00 per dog per month.

Keep dog food away from kerosene, onions and the like to avoid odors. Keep in a cool dry place, preferably in covered metal containers.

Monotonous diet, unchanged week after week, tends to make dogs less potent sexually.

Hulled bran, such as humans eat, tends to relieve constipation, but rough bran, such as fed to horses, tends to check diarrhea.

2'

- This equipment for holding food and water pans or dishes keeps them off the ground or floor, out of the dust, and prevents "shoving."

It is only chicken bones, not chicken meat, which should not be fed to dogs.

The rule to feed dogs in quantity according to their weight, is unreliable; various factors such as age, exercise, health and the like must be considered.

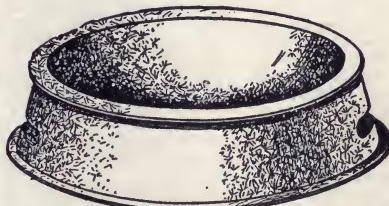
A pinch of salt should be thrown into the regular food of the dog, about every other day—a simple thing yet most dog owners woefully neglect to add this necessary item.

Worthy of Your Dog?

The dog has come to us from the wilds. He is the one species out of the more than one hundred thousand of the animal kingdom which without whip or harness, without compulsion or fear, has come gladly to man to live by his side and be his servant.

In return for this complete loyalty, devotion, unselfishness and love, every dog is entitled to receive the best care and feeding. To own a dog is an obligation; the dog owner should be worthy of his dog. He who does not assume gladly the loving task of feeding, grooming and caring for his dog and keeping his dog from running at large, is not worthy of owning a dog.

Feed your dog properly; feed wholesome food; have a care for him; and he will show you your reward in his clear eye, wagging tail, joyous bark and a loyalty that ends only with death.



- Well designed dog food or water dish; note wide base and smaller top.
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Feeding the Dog is one of the twelve booklets in the HANDY DOG BOOKLET series. The other eleven are:

Laws about Dogs, How to Ship Dogs, Whelping of Puppies, Dog Shows and Rules, Housebreaking the Dog, The Dog in the Show Ring, Handling the Dog Mating, Stud Dog's Care and Management, Anatomy of the Dog, Puppies and Their Care, How to Sell Dogs.

The price is 25c each, 3 for 50c, 7 for \$1, 13c each for 8 or more, or the total series of 12 for \$1.50, cash or C.O.D. (Durably bound in book form, \$2.50.)

WARTIME ADDENDA

As we send this 5th edition to press, our government has re-established ration points on most meat products. But heart, liver, kidneys, tripe, brains, sweetbreads, ox tails, meat trimmings, etc. (also horse meat, fish, wild game) remain free.

Dry dog food is as abundant as previously. Dog owners are buying it generously for the government report of 1943 sales of this product gave a total figure of 996,000,000 lbs., which at an average retail price of 12c lb., represents an outlay of \$108,720,000 (1941 canned dog food sales totaled approximately \$70,000,000, based on 10c per pound can).

The dog owner need not worry greatly over wartime rationing. Stews offer a way out. Table scraps, meat trimmings, vegetables, available meat and gland products as mentioned, even chicken heads and feet, turnip tops, and so on as the ingenuity of the housewife invents—all can be put into the omnibus pot for a nutritious stew.

And if this be added to dry biscuit food, our dogs can thrive under the severe conditions of wartime food rationing without lessening the human food supply by a single pound.—W. J.